

Application No. 10/731,738
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Remarks

Applicants and the undersigned reviewed the pending Office Action carefully before preparing this response. Reconsideration is respectfully requested. Nonetheless, in light of the positions presented herein, this application is believed to be in condition for allowance.

Please note that claims 1-12 and 28-34 are pending upon cancellation of non-elected claims 13-27. It was agreed, by telephone conference with Examiner Susannah E. Lee, that with prior election of Group I Applicants should have full benefit of the election and that the following remarks will also be considered in the context of compounds claims 1-12.

The Examiner rejects several claims under 35 USC § 103 as obvious in view of Powers. Applicants appreciate the Examiner's concern, but respectfully disagree. It appears the Examiner misconstrued this invention, did not consider it as a whole, and did not take into consideration one or more result-effective variables associated therewith. In this regard, Powers actually teaches away from Applicants' invention and cannot be construed to support *prima facie* obviousness. This rejection should be withdrawn, with the subject claims allowed to proceed toward issue.

Section 103 requires evaluation of the invention "as a whole." It is well established that a compound and its properties are inseparable. Obviousness cannot be determined merely on similarity of compound structure. Powers teaches boronic acid lactamase inhibitor compounds that provide a hydrophobic interaction with the Leu119 and Leu293 residues of AmpC via an oxime dimethyl group off an R1 thiazole side chain. (See, Powers at p. 9213.) Powers does not discuss the R2 side chain or any possible functional relationship therewith: in the Powers compounds, the carbon *alpha* to boron is unsubstituted.

In a clear departure from the art, Applicants' compounds (of claims 1-12 and as part of the compositions of claims 27-34) provide a range of substituents *alpha* to boron.

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The impressive results obtained are believed to be at least in part attributable to the substitution for hydrogen at that position. Illustrating a broader aspect of this invention, Applicants' compounds 16 and 21 provide R2 side chain substituents hydrophobically interactive with the same leucine residues affected by Powers' R1 oxime substituent. Powers did not consider R2 function and certainly did not suggest substitution *alpha* to boron. Only Applicants recognized the benefits of a structural-functional relationship involving an R2 side chain substituent. Unsuggested recognition is a clear indication of non-obviousness. When considered with the structural distinctions, such properties show the invention to be patentable.

Applicants' invention is not an obvious modification of Powers. Any suggestion or motivation to modify Powers must come from some teaching in the art. That is, substitution *alpha* to boron cannot derive from Applicants' specification. Powers provides several boronic compound structures, but no basis for the structural relationship selected by Applicants. In fact, the use of such unsubstituted boronic acid compounds by Powers teaches away from Applicants' invention. As mentioned above, by attributing hydrophobic interaction (at Leu119 and Leu293) to an R1 group, Powers teaches away from using the opposite end (i.e., via an R2 side chain) of an inhibitor compound. Teaching away epitomizes lack of motivation. Absent requisite motivation, there is no *prima facie* obviousness. Powers should be withdrawn, with the subject claims allowed to issue.

The Examiner also raised a § 112 concern with regard to claim 34 and use of the term " β -lactam antibiotic." Again, Applicants appreciate the Examiner's concern, but the requirement is that the application reasonably convey the claimed invention to persons skilled in the art. Knowledge possessed by such individuals can be established by reference to prior art patents and publications. Here, support is found in the first paragraph of Powers: those skilled in the art would understand what is meant by " β -lactam antibiotic." The term is self-defined, in the art. No further information is

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needed. Representative β -lactam antibiotics are discussed throughout the present specification, in particular on page 35, thereof and would sufficiently indicate to those skilled in the art Applicants firmly possess the invention of claim 34. Accordingly, it is respectfully requested that this rejection be withdrawn.

This application is believed to be in condition for allowance. Consistent therewith, favorable action is respectfully requested. The Examiner is invited to contact the undersigned should any issue remain. Thank you for your help and consideration.

Respectfully submitted,



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